



Press Release

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High thermal, 30 W/m-K Loctite Ablestik ABP 6395T formulation requires no sintering, material delivers design flexibility and automotive-grade reliability

Henkel delivers versatile, high thermal die attach adhesive for Power IC applications

Irvine, CA – As integrated circuits (ICs) become more dense and complex, particularly in the power device sector, new approaches to die thermal control and electrical performance are required. Henkel today announced the availability of a die attach adhesive that provides high thermal capability to enable superior operation of power semiconductor packages. With 30 W/m-K thermal conductivity – among the market's highest thermal performance without sintering – Loctite Ablestik 6395T is the latest in the company's portfolio of high thermal solutions, and allows integration of back-side metalized or bare silicon (Si) die.

Elevated operational temperature is a key factor influencing die performance, so thorough heat dissipation helps ensure functional execution and long-term reliability. Henkel's Global Market Segment Head for Semiconductor Packaging Materials, Ramachandran Trichur, explains the mechanism of heat transfer from the die and why material selection is critical: "For most high-power semiconductor packages, the primary path for heat dissipation from the device is through the die attach material. Because the material is in direct contact with the die, its thermal characteristics – which include material thickness, thermal conductivity, and thermal resistance – are the most important. Loctite Ablestik 6395T's 30 W/m-K bulk thermal conductivity provides excellent heat transfer for metalized or bare Si die."

Most high-power semiconductor applications, like those found in electric vehicles, industrial automation systems, and 5G infrastructure components, also demand good electrical conductivity. Too much electrical resistance between the die and the package can result in energy loss and reduce the device's energy efficiency. As in the case of thermal capabilities, package electrical performance is largely influenced by the die attach layer – especially in power

ICs, where die attach is the most significant contributor to electrical resistance, or RDS (on). Loctite Ablestik 6395T improves energy efficiency by significantly lowering resistance.

In addition to its enabling electrical and thermal characteristics, Loctite Ablestik 6395T provides several processability, sustainability, and reliability advantages, including:

- High reliability: meets automotive grade 0 thermal cycling and MSL 1 reliability standards on die sizes up to 3.0 mm x 3.0 mm
- Compatibility with multiple die finish/lead frame combinations
- Low, <5% volatile organic compound (VOC) content on cure
- Longer work-life: enables high-density lead frame packaging with longer stage life and open time
- No resin bleed out

"While electrical and thermal capability are top priorities," says Trichur in summary, "a streamlined bill of materials is also important for customers. Loctite Ablestik 6395T allows metalized or non-metalized die integration, delivers lead frame flexibility, and allows for a wide die size range – all using a high-reliability formulation. Henkel has achieved this unique balance of supply simplification, processability, and thermal and electrical performance, effectively extending the company's leadership in the high thermal die attach space."

To learn more, visit www.henkel-adhesives.com or connect with a Henkel technical specialist.

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With its brands, innovations and technologies, Henkel holds leading market positions worldwide in the industrial and consumer businesses. The business unit Adhesive Technologies is the global leader in the market of adhesives, sealants and functional coatings. With Consumer Brands, the company holds leading positions especially in hair care and laundry & home care in many markets and categories around the world. The company's three strongest brands are Loctite, Persil and Schwarzkopf. In fiscal 2022, Henkel reported sales of more than 22 billion euros and adjusted operating profit of around 2.3 billion euros. Henkel's preferred shares are listed in the German stock index DAX. Sustainability has a long tradition at Henkel, and the company has a clear sustainability strategy with concrete targets. Henkel was founded in 1876 and today employs a diverse team of more than 50,000 people worldwide – united by a strong corporate culture, shared values and a common purpose: "Pioneers at heart for the good of generations." More information at www.henkel.com

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